

ASX Announcement

23 January 2024



Wingellina Metallurgical Testwork Update

Nico Resources Limited ("**Nico**" or the "**Company**") (ASX: NC1) is pleased to provide an update on its current metallurgical testwork program. The program has been developed to underpin a Definitive Feasibility Study ("**DFS**") for development of the world-class Wingellina Nickel-Cobalt Project ("**Wingellina**" or the "**Project**") located in Western Australia.

Wingellina is a world-class oxide-type nickel cobalt deposit which hosts an initial reserve capable of producing approximately 40,000t of nickel and 3,000t of cobalt in a Mixed Hydroxide Precipitate ("**MHP**") for at least 42 years. A pre-feasibility study¹ ("**PFS**") completed on the Project in December 2022 confirmed a globally significant Tier 1 asset, characterised by its long life, low cost and high operating margins.

The results received to date from this comprehensive testwork program show that Wingellina ore has characteristics ideally suited for High Pressure Acid Leach ("**HPAL**") processing and that additional operating benefits are available which will provide a reduction in both operating and capital costs.

Notwithstanding the current market conditions, the Company will continue to focus on the advancement of the world-class Project so that it is well positioned to take advantage of an improvement in market conditions when they occur.

Highlights

- Bulk Sample acquisition - 10 tonne bulk samples of limonite ore and Lewis calcrete have been sourced for bench scale and pilot plant testing. Limonite bench scale samples have been sourced from Bauer holes and the material has been characterised and tested;
- Ore preparation - potential for rejection of coarse size fractions to improve nickel grade by 5% and reject acid consuming minerals leading to a potential 12% reduction in acid consumption;
- Rheology testwork has shown solids content of around 48% which will have a direct impact on lowering both the operating and capital costs of the Project. The rheological behaviour of laterite ores has a significant impact on the viability of laterite projects and the result exceeds the 46% used in the 2022 PFS;
- Preliminary HPAL results indicate 94.5% Ni and Co extraction from HPAL test;
- Limited abrasion of equipment confirmed from minimal presence of chromite within the ore. Chromite removal tested and found not to be required;
- Preliminary Primary Neutralisation tests conducted;
- Lewis calcrete contains mainly calcite and quartz and is suitable for post-HPAL neutralization and on-site quicklime production.

¹ See ASX Announcement 22 December 2022 "PFS confirms Wingellina as a Tier 1 project capable of supplying decades on Nickel and Cobalt".

Testwork Program

During the second half of 2023 Nico embarked on a testwork program with the objective to generate sufficient data to underpin a DFS level flowsheet and engineering design for the Project. The Wingellina deposit is a large nickel-cobalt reserve with a predominant high iron limonite ore which is ideally suited for processing by HPAL. The processing flowsheet consists of ore scrubbing and beneficiation, HPAL, neutralization, Counter Current Decantation ("**CCD**"), impurity (alumina and iron) removal, Mixed Hydroxide Precipitant ("**MHP**") precipitation, tailings neutralization and disposal. The initial sample preparation and bench scale test programs commenced in September 2023 with the objective of confirming the flowsheet and process design criteria for a pilot plant campaign on a bulk sample. The main test program is being undertaken at the ALS Metallurgy laboratories in Perth.

Samples for testwork

Samples for limonite testwork were sourced from a Bauer drilling campaign conducted in 2013. During this campaign four 30 meter holes were drilled to generate bulk samples for metallurgical testwork. Holes three and four were selected as sources for the current program since they represented areas of the deposit that were identified for early processing during prefeasibility studies.

Samples from the Lewis calcrete deposit were sourced from Reverse Circulation ("**RC**") Drilling samples to represent a composite with an assay of 36% CaO (20% CaO cut-off).

Results

Salient results of the testwork conducted to date are presented below.



Figure 1: Limonite Ore from Wingellina being prepared for testing

Limonite ore characterisation and variability

A total of 54 limonite sub-samples were subjected to chemical analysis. Elements tested included payable metals, nickel and cobalt as well as other elements required to understand the mineralogical composition of the ore. Test work was also completed to assess the potential acid consumption during HPAL processing. Table 1 shows the average grades for each Bauer hole from 3 to 30 meters.

In both holes high magnesium carbonate concentrations were present in the sections between 7 & 9 meters. Hole 3 showed significantly higher Si values than Hole 4 with the latter having higher Fe and Cr values. However, the combination of samples from holes 3 and 4 provides a typical limonite ore sample for test work that demonstrates a reasonable representation of the overall orebody.

In summary, the Wingellina limonite ore is a high iron goethite which makes it extremely amenable to HPAL treatment. The ore is very similar to the Moa Bay nickel laterite deposit which has been extracting nickel from the HPAL process since the late 1950's.

Assay	Hole 3 (%)	Hole 4 (%)	HPAL Feed*
Ni	1.21	1.26	1.21
Co	0.080	0.075	0.082
Fe	32.8	40.6	37.5
Si	10.6	3.1	6.8
Al	5.3	6.1	5.7
Mg	1.86	1.33	0.76
Ca	0.45	0.42	0.72
Cr	0.55	1.80	1.33
Mn	0.59	0.73	0.65
Ti	0.28	0.34	0.37
Na	0.25	0.15	0.04
C as CO ₃	2.79	3.19	-
LOI_1000	13.5	15.7	-

* Beneficiated HPAL feed sample generated for Hydromet Bench Testwork.

Table 1: Limonite Average Concentrations in Holes 3 and 4

Limonite – Elemental Distribution by Size

Complete size-by-size assays on 54 samples generated 8400 data points of assay vs particle size mass distribution. The method involved active screening, breaking up friable agglomerates in the process to emulate the action of a scrubber. A further 10 samples were also subjected to "natural screening" which clearly demonstrated the need for scrubbing to breakdown the agglomerated particles.

The size-by-size data also provides a means to determine the distribution of payable metals (nickel and cobalt) and gangue elements by size fraction. To appreciate the contribution of both nickel and cobalt, a Nickel Equivalent (Ni Eq) value was calculated using the formula: $\text{Ni Eq \%} = \text{Ni\%} + 1.5 \times \text{Co\%}$

The weighting of the contribution from cobalt is based on historical metal prices and potential recovery and refining credits from MHP refining.



Importantly the concentration of gangue elements such as Al, Mg, Ca, Mn and Fe in the various samples and size fractions can also be assessed and used to estimate the potential sulphuric acid consumption during HPAL processing.

Initial analysis of the size-by-size assays focussed on the potential for beneficiation of the ore prior to HPAL. Figure 2 provides a typical plot of elemental distribution by size fraction for one of the samples.

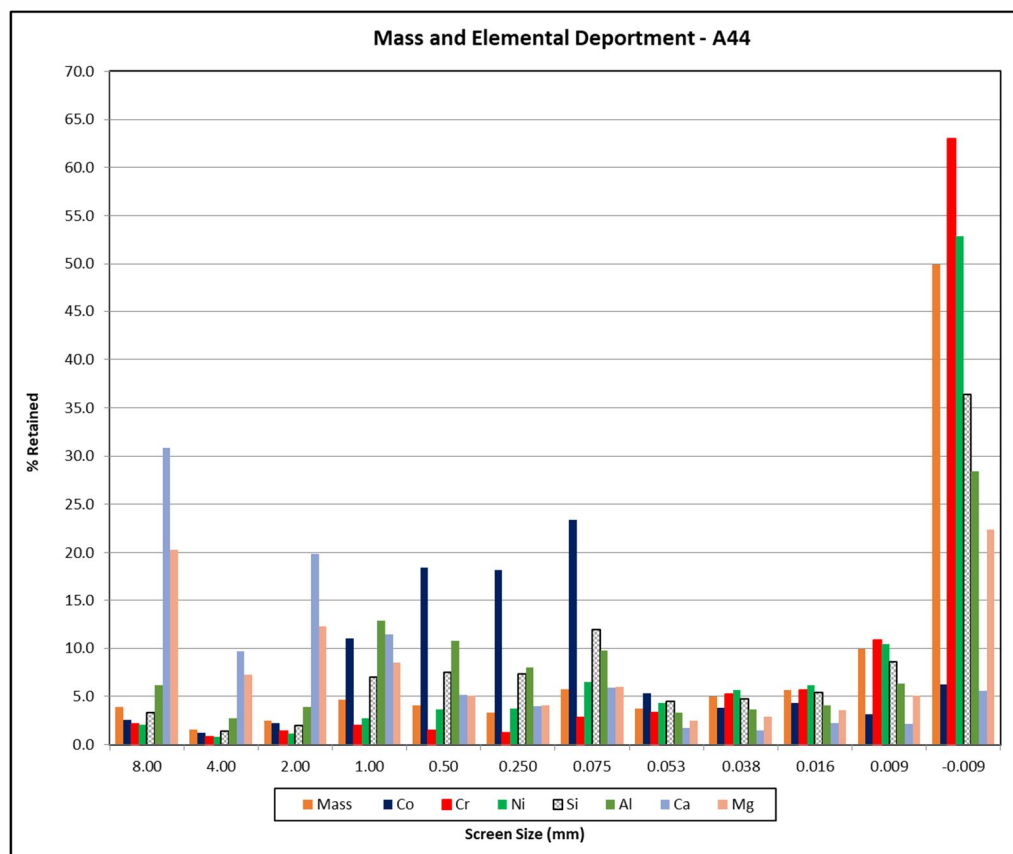


Figure 2: Typical Plot of Mass and Elemental Distribution by Size Fraction

Although there was significant variation between individual samples, each representing a 1-meter section, the following trends were witnessed:

- Approximately 50% of the mass is below 10 micron containing nickel concentrations above the average grade with high Fe and Cr concentrations;
- Approximately 80% of the mass is below 75 micron with a slight upgrade in Ni Eq;
- Cobalt is concentrated in the intermediate size fractions between 75 micron and 2 mm, therefore these intermediate size fractions typically display an elevated Ni Eq;
- Coarse fractions are increasingly depleted of nickel and cobalt, and enriched with acid consumers Al, Mg and Ca, with increasing particle size. The acid consuming minerals were found to be gibbsite, magnesite and calcite;
- Coarse fractions can be rejected based on Ni Eq grade. Ideal cut-off screen size for rejection varies between sections from 0.5 to 1.0 and 2.0 mm;
- Coarse fractions mainly consist of calcite and magnesite with elevated gibbsite values. See Figure 3 for a photo of the typical coarse fraction after scrubbing.



Figure 3: Coarse Material containing calcite, magnesite and gibbsite.

Figure 4 shows the mathematically calculated “grade-recovery” curves for the combined samples from holes 3 and 4. On average, upgrades of up to 7% (0.5mm cut-off), 6% (1mm cut-off) and 4-5% (2 mm cut-off) can theoretically be obtained with only minor loss of nickel and cobalt to the coarse reject fraction.

It is envisaged that the ore preparation pilot plant will be assembled to allow flexible operation to enable rejection of the coarse fraction at different screen sizes and optimization for the ore variability.

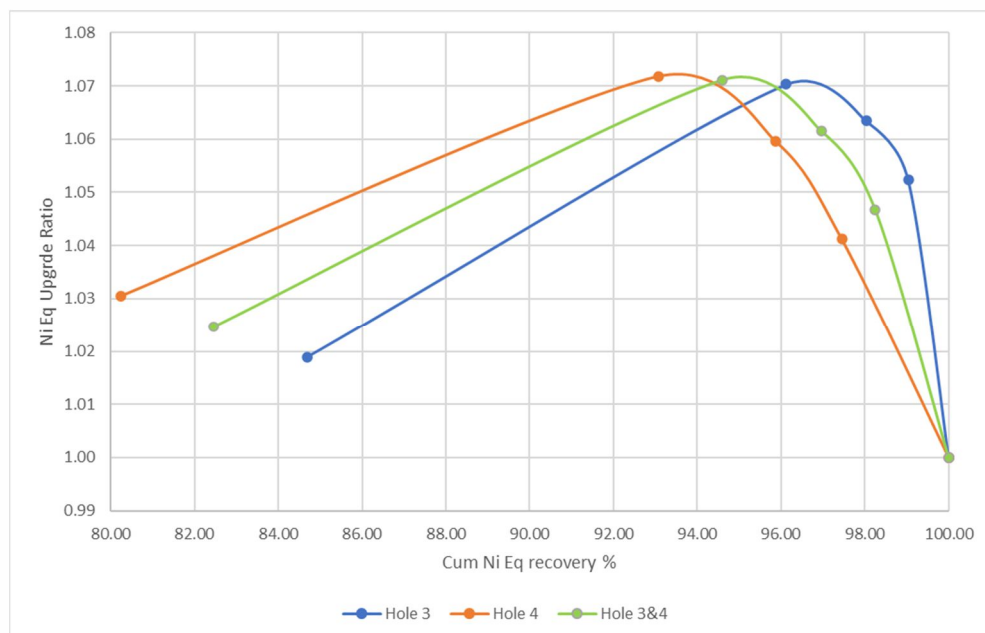


Figure 4: Calculated Ni Eq upgrade ratios for Holes 3 & 4 with increasing cut-off size (0.075 mm, 0.5 mm, 1.0 mm, 2.0 mm)

Chromite Removal by Limonite Scrubbing and Gravity Concentration

Some HPAL processing plants suffer excessive wear of equipment due to the presence of chromite mineral particles in the ore. To assess the potential for chromite removal, 25 kg of each of 15 selected samples were subjected to scrubbing and screening, followed by gravity concentration testing of the intermediate size fraction on a Wilfley table. The results indicated that chromite mineral particles could not be separated as a concentrated stream from the ore. Consequently, it was concluded that the ore body contained insignificant amounts of chromite and that the chrome is a substitute and is contained within the goethite mineral lattice.

It is therefore unlikely that a chromite removal circuit would be required for the Project due to the lack of chromite within the Wingellina orebody. This will also significantly reduce mineral abrasion wear rates on equipment and result in a reduction in on-going maintenance costs.

HPAL bench scale testing sample

Two samples from hole 3 and hole 4 each were selected to prepare a composite for HPAL testing. The samples were initially individually subjected to scrubbing and screening, to reject the lower grade coarse fractions. Grinding to a +75 micron fraction was then completed prior to combination to make a beneficiated blend for the HPAL bench testwork. The assay of the feed sample prepared for HPAL tests (HPAL Feed) is shown in Table 1.

The effect of beneficiation of these samples was calculated from the combination of test data from the individual samples. The graph below shows the theoretical cumulative grade - recovery relationship for the combined sample and for the expected beneficiated Blend sample, based on individual cut-offs. The theoretical acid consumption has also been calculated.

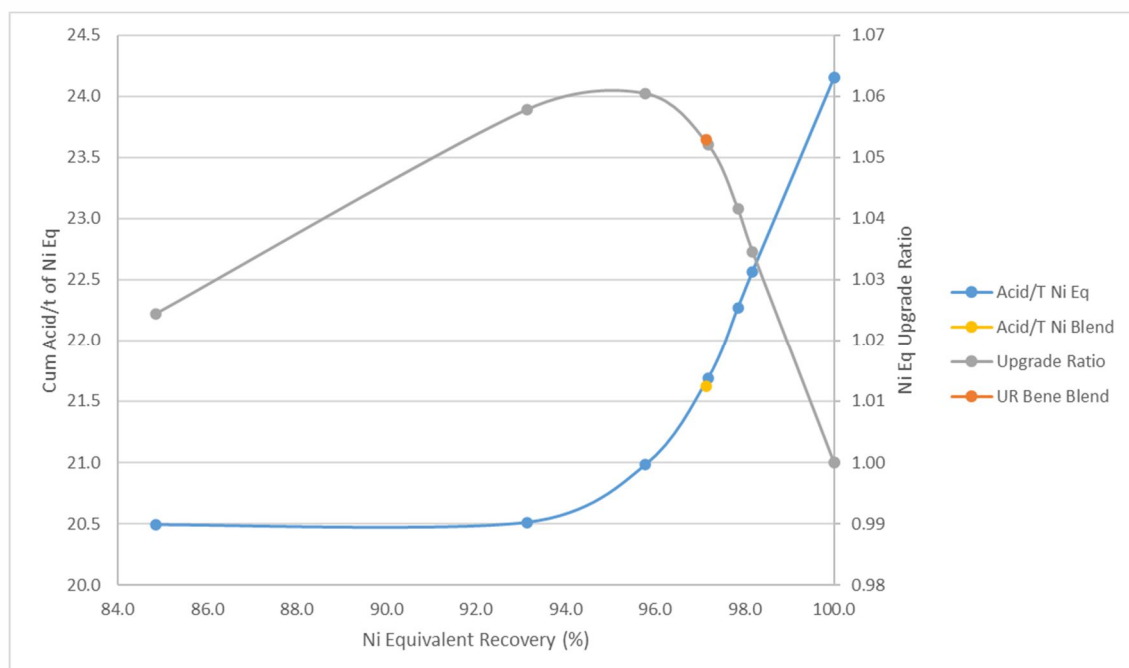


Figure 5: Calculated Ni Eq upgrade ratios for Holes 3 & 4 with increasing cut-off size

As a result of the beneficiation the results in Table 2 are calculated to be achievable. The rejection of the coarser, low Ni Eq grade and high acid consuming fractions results in an increase in acid efficiency of 12% while increasing the HPAL feed grade by 5.3%. There is potential to improve the HPAL feed acid intensity further by rejecting at a lower cut size.

Assay	Units	Unbeneficiated	Beneficiated	Improvement
Acid Consumption	Kg/t	318	300	6.0%
Mass recovery	%	100	92.3	7.7%
Ni Eq recovery	%	100	97.1	-2.9%
Ni Eq Feed Grade	%	1.33	1.40	5.3%
Ni Eq Upgrade ratio	-		1.053	5.3%
Acid Intensity	t Acid/t Ni	24.2	21.6	12.0%

Table 2: Implied HPAL Feed improvements through Beneficiation of composite sample

HPAL bench scale testing

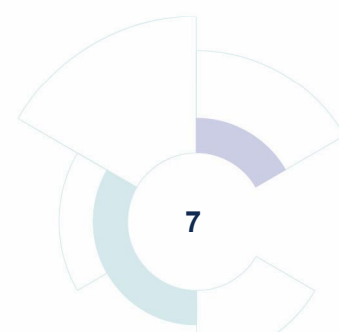
The rheological behaviour of laterite ores greatly influences the viability of any HPAL project. The main technical challenges relate to the flowability of laterite slurries during pipeline transport, liquid-solid separation processes, indirect heat exchange processes and equipment design and high temperature sulfuric acid leaching.

Rheology testing on Wingellina ore confirmed that the feed slurry would be pumpable at a solids concentration of 48% compared to that of around 40% observed at other HPAL plants. This is principally a result of the minimal clay content of the Wingellina ore. The high solids content of Wingellina ore has a significant benefit to both the capital and operating costs of the Project.

A series of preliminary bench scale HPAL tests has also been performed on the beneficiated composite sample. The following preliminary conclusions can be drawn:

- Nickel and cobalt extractions above 95% are achievable at a temperature between 245 to 260 °C and acid addition of between 270 and 330 kg/t; and
- The leach is essentially completed within 60 minutes.

The tests confirm the acid addition regime and temperatures that lead to satisfactory nickel and cobalt extractions. Further optimisation and confirmatory tests are planned after the geo-metallurgical model has been finalised.



Calcrete Characterization

Sub-samples of calcrete from the Lewis deposit were taken to produce a composite sample for bench scale testwork with a 35.1% CaO assay and the following characteristics as shown in Table 3 below.

	Units	Value
Composition		
CaCO ₃	%	62.8
SiO ₂	%	29.2
Al ₂ O ₃	%	2.7
MgCO ₃	%	2.5
Fe ₂ O ₃	%	1.4
K ₂ O	%	0.6
Acid Neutralizing Capacity	kg H ₂ SO ₄ / t	633

Table 3: Calcrete test sample characteristics

The calcrete samples obtained by reverse circulation drilling were screened and size-by size assays performed on selected samples. The mass distribution for these samples was similar with typically 20% in the +2mm fraction, 11%, 11% and 12% in each of the +1.0mm, +0.5mm and +0.25mm fractions, 17% in the +75 micron fraction and 28% in the -75 micron fraction.

Figure 5 below shows the mineral distribution per size fraction. The +2mm fraction retained the highest concentration of calcite (CaCO₃), while the <75 micron fraction was also enriched with calcite relative to quartz (SiO₂). Quartz had the highest relative concentration in the +75 minus 250 micron fraction. This indicates potential differential breakage characteristics of the calcite and quartz.

Calcrete neutralization testwork up to pH 5 demonstrated the suitability of the Lewis calcrete for hydrometallurgical processing.

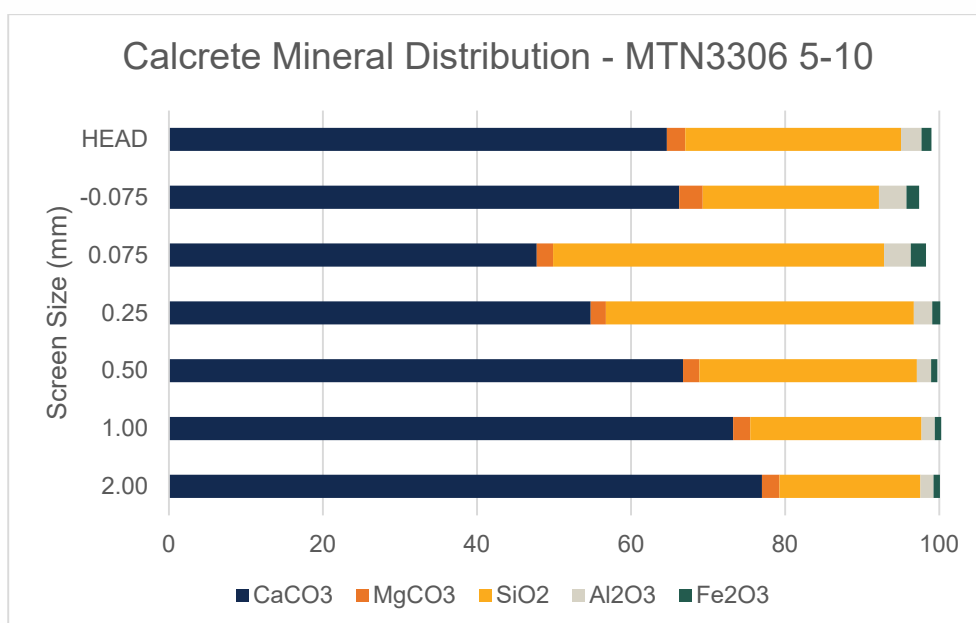


Figure 5: Typical Mineral Distribution in Calcrete RC Chip samples

Quicklime Generation at Wingellina

Selected samples of high-grade calcrete (target 44.5 % CaO, 40% CaO cut-off) from the Lewis calcrete deposit, located approximately 30 kilometres north of Wingellina, were combined for a testwork program at Simulus Laboratories. The results received show that calcrete from the Lewis deposit could be calcined to produce quicklime for use in the hydromet flowsheet at Wingellina. The cost benefits of sourcing calcrete and producing quicklime on-site at Wingellina are significant.

Initial bench scale testwork in muffle furnaces and small rotary kilns were used to determine calcine temperature and kiln residence time. Titration with acid and slaking tests were conducted on the calcined calcrete to confirm the reactivity of the lime produced. Both methods indicate that at 1000 °C the Lewis calcrete produced quicklime with a CaO content of around 65%.

The results were confirmed at pilot plant scale when a continuous rotary kiln run was performed to generate samples to verify reactivity and generate a bulk sample for the HPAL pilot campaign. Further slaking tests and bench scale process testing is currently being performed to ensure smooth operation of lime slaking during the HPAL pilot plant campaign.

Ongoing testwork

Scrubbing Testwork

Testwork has commenced on a 50 kg batch scrubbing test program. The material is a blend of 29 interval samples from holes 3 and 4 to determine the energy requirements for effective scrubbing and break-up of agglomerates. The results will be used to design a continuous ore preparation pilot plant which will provide feed material for the HPAL pilot plant. Data from the continuous ore preparation plant will be used for the final plant design.

Hydrometallurgical Bench Scale test work

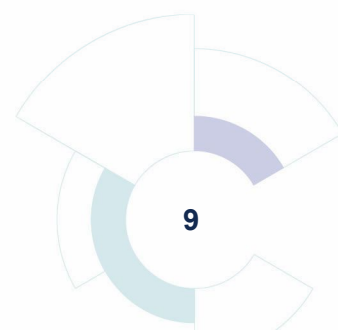
Several bulk HPAL leaches have been conducted to generate slurry for downstream testing. Currently ongoing testing includes verification of the performance criteria for primary neutralization, CCD, secondary neutralization, MHP precipitation, scavenging and Mn removal.

Saprolite and Transitional ore Test work

A bench scale test work program has commenced to assess the beneficiation and leaching potential of saprolite and transitional ore samples for potential incorporation into the process flowsheet.

Pilot Plant testing

Organisation of hydrometallurgical piloting and bulk sample preparation will commence on completion of the bench scale testwork. The pilot plant campaign is currently scheduled for Q3 2024.



Forward-looking statements:

This announcement contains certain forward-looking statements. Forward-looking statements are statements that are not historical and consist primarily of projections — statements regarding future plans, expectations and developments. Words such as “expects”, “intends”, “plans”, “may”, “could”, “potential”, “should”, “anticipates”, “likely”, and “believes” and words of similar import tend to identify forward-looking statements. All statements other than those of historical facts included in this announcement are forward-looking statements, including, without limitation, statements regarding plans, strategies and objectives, anticipated production and expected costs and projections and estimates of ore reserves and mineral resources. Indications of, and guidance on future earnings, cash flows, costs, financial position and performance are also forward-looking statements.

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This announcement has been authorised for release by the Board.

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